

ABSTRACT

Apparatus for conducting geophysical surveys comprising a multiplicity of intelligent electrodes provided on a multi-conductor cable, for receiving a command signal in response to which predetermined electrodes are connected to selected conductors in the cable. Each intelligent electrode is identical in all respects, including its programming, resulting in simplified construction of the cable and easy replacement of the intelligent electrodes. Instead of assigning a unique address code to each switch in a series of take-outs on a multi-conductor cable, each electronic switch is programmed with the same address code. That is, each switch is programmed to be activated when it receives a code command that, for example, is prefaced with a particular address, e.g. the number 1. The second part of the code (y) instructs the switch as to which conductor in the multi-conductor cable is to be connected to the local electrode at the location of the switch. When the controller issues a code command that is prefaced by a number which is larger than 1, (e.g. n), then the first switch in the sequence of switches along the cable decrements the preface number. The first switch then re-transmits the code command, with only the preface portion having been changed, (i.e. to n-1), along the cable to the next switch in the series. Each successive switch performs a similar modification to the preface number, and retransmits the progressively modified code command to the next switch in the series. Ultimately, when the modified command reaches the nth switch, it is prefaced with the number 1, whereupon that switch then recognizes it as a valid command to operate. The second part of the command (y) remains unaltered through the repeated re-transmissions, and determines which conductor in the cable is to be connected to the electrode (i.e. to ground).